ABSTRACT OF THE DISCLOSURE

[1068] RAW aliasing can be predicted with register bypassing based at least in part on execution displacement alias prediction. Repeated aliasing between read and write operations (e.g., within a loop), can be reliably predicted based on displacement between the aliasing operations. Performing register bypassing for predicted to alias operations facilitates faster RAW bypassing and mitigates the performance impact of aliasing read operations. The repeated aliasing between operations is tracked along with register information of the aliasing write operations. After exceeding a confidence threshold, an instance of a read operation is predicted to alias with an instance of a write operation in accordance with the previously observed repeated aliasing. Based on displacement between the instances of the operations, the register information of the write operation instance is used to bypass data to the read operation instance.